Natural Resource perspectives

Number 45, June 1999

The material that follows has been provided by the Overseas Development Institute

RECONCILING INTERESTS AMONG WILDLIFE, LIVESTOCK AND PEOPLE IN EASTERN AFRICA: A SUSTAINABLE LIVELIHOODS APPROACH

Charlotte Boyd with Roger Blench, David Bourn, Liz Drake and Peter Stevenson

From the perspective of local livelihoods this paper explores the complex interactions between wildlife, livestock and people, and options for integrated wildlife and livestock management in the semi-arid rangelands of eastern Africa. The paper draws on the sustainable livelihoods approach which explicitly considers whether households have access to the assets required to engage in an activity, and how that activity 'fits' with existing livelihood activities.

Policy conclusions

- Appraisal and evaluation of integrated conservation and development projects have proven problematic because conventional methods fail to capture both direct and indirect impacts on rural livelihoods and their distribution across households.
- In the semi-arid rangelands of eastern Africa, where 'plains game' is concentrated in and around protected areas, the costs of living with wildlife cannot simply be compensated by income generation from wildlife management.
- Efforts to promote integrated wildlife and livestock management (IWLM) need to ensure access for pastoralists to seasonal grazing and water, and limit the negative aspects of wildlife integration (such as disease transmission, predation and crop damage).
- The value of income generated by wildlife management can be enhanced, not only by enabling local people to realise their share, but also by ensuring that the timing of income flows fits with seasonal income and expenditure patterns and by extending individual household control over this income.
- Incentives for integrating wildlife management into existing livelihood strategies are likely to be greater for pastoralists than agro-pastoralists, although institutional aspects may favour agro-pastoralists.

Context

In the past, the general view among both conservationists and local populations has been that wildlife conservation and animal husbandry are incompatible forms of land use and should be kept apart. However, competition and conflicts over land use and access to water have intensified as demographic pressure on rangelands and international concern for the conservation of biological diversity have increased. New opportunities to address these conflicts and concerns derive from more dynamic concepts of rangeland ecology and changes in conservation philosophies to incorporate benefits to local people. However, the impacts of efforts to integrate conservation and development are difficult to appraise or evaluate, as illustrated in the cited case studies which do not necessarily represent consensus views. This paper presents a comparative analysis of separate and integrated wildlife and livestock management in east African rangelands, drawing on the sustainable livelihoods approach.

Evolution of livestock/wildlife interactions

Livestock-wildlife conflicts are primarily focused on access to grazing and water resources, as in the cases of Amboseli National Park and the Maasai Mara Reserve in Kenya, but predation and disease are also significant issues for livestock-owners (Bourn and Blench, 1999). Pastoralists and wildlife have co-existed in African rangelands for many hundreds of years, though with few of the tensions evident today. In the past, human and livestock populations were relatively small and widely dispersed, and domestic animals were managed to minimise the risks of predation and disease transmission. However, competition for scarce grazing and water resources is increasing, and the potential for conflicts between wildlife managers and livestock owners is growing as pastoralists and agro-pastoralists move into new areas and/or live in the vicinity of protected areas. The main factors driving this transformation are increasing demographic pressure, the expansion of cultivation, and the reduction in rangeland resources, through privatisation for commercial agriculture and ranching, and nationalisation for conservation. Protected areas have been established over approximately 7.8 per cent of Kenya, 27.9 per cent of Tanzania and 20.8 per cent of Uganda (IUCN, 1998). Large pastoral herds have generally been excluded, as in the relatively recent case of Mkomazi Reserve in Tanzania. This transition has been accompanied by an overall reduction in tsetse infestation, either by direct control measures, or as an indirect consequence of the general decline in wildlife, habitat conversion and land use change associated with agricultural expansion. It has also been facilitated by increased access to veterinary drugs allowing herds into previously disease-prone areas.

New concepts in rangeland ecology and conservation

Opportunities to address these conflicts and competing land use interests are provided by more dynamic concepts of rangeland ecology and changes in conservation philosophies to incorporate benefits to local people. The ecology of semi-arid rangelands is best conceptualised in terms of non-equilibrium dynamics. Rangeland productivity is constrained more by density-independent factors such as climatic variability and other external shocks to the system, than by density-dependent factors such as stocking rates and grazing pressure. This suggests that pastoralist stocking strategies are less damaging to rangeland resources than previously thought, and that rangeland conservation would be better served by allowing traditional patterns of pastoral movements than by promoting more sedentary lifestyles (Behnke et al.,

1993). Ngorongoro Conservation Area in Tanzania is a long-standing case study of pastoralism combined with conservation and is consistent with this theory (see Box 1).

Box 1 Ngorongoro Conservation Area, Tanzania: Pastoralism combined with conservation

The Ngorongoro Conservation Area (NCA) was established in 1959 as a multiple land use area dedicated to the promotion of both natural resource conservation and human development. The NCA combines wildlife conservation and management with pastoralism and tourism. Pastoral settlement in the crater itself has been banned since 1974, but in 1987–88 nearly 25,000 Maasai pastoralists still resided within the NCA, together with some 286,000 head of livestock. Livestock has been excluded from the crater since the early nineties. Long-term monitoring of wildlife populations of the Ngorongoro crater itself confirm exceptionally high density of wildlife during the 1980s, although declines in some species have been attributed to illegal hunting and a decline in pasture quality. Annual income from tourism in Ngorongoro was equivalent to US$3.7 million.

Various commentators have argued that conservation goals have been achieved at the expense of development goals, because of restrictions on grazing, burning and agriculture. A common criticism has been that local pastoral inhabitants see very few benefits from wildlife. Conservationists, on the other hand, argue that livestock mismanagement underlies the decline in pastoral livelihoods. However, the need for alternative sources of income is highlighted by the widespread decline in the ratio of livestock to people among pastoral populations, attributed largely to human population growth and shortages of grazing land. Concerns over the impacts of cultivation, and the compatibility of wildlife and agro-pastoralism have lead to suggestions that community-based tourism and improved livestock management, may make a growing contribution to livelihoods.
Source: Potkanski, 1997

Conservation philosophies have also evolved for both pragmatic and ethical reasons. Conservation authorities, often short of resources, have generally failed to prevent the decline in wildlife numbers through protectionism, exclusion and policing. There is growing recognition that conservation areas as islands surrounded by wildlife deserts are not sustainable, and that management of wildlife outside conservation areas needs to be improved. For example, the overall policy of Amboseli National Park is ‘to integrate the Park with surrounding livestock grazing lands so that the effective area for wildlife was much larger than the central protected areas, while the local herdsmen enjoyed improved living standards and developed a vested interest in the Park’ (Lindsay, 1987:158, our emphasis). Reinforcing this are concerns, especially among international donor organisations, that conventional approaches to biodiversity conservation place unacceptable burdens on poor local communities. For example, in Mkomazi Game Reserve in Tanzania, access to grazing and water resources has been restricted and the local livestock economy has collapsed; fuelwood gathering from the Reserve is punished; and local participation in decision-making is limited (Homewood et al., 1997).

Recent efforts to persuade local people to live with wildlife have generally incorporated a combination of the following strategies:

- reduction of the costs of living with wildlife, for example, through controlled resource use in conservation areas and improved control of problem animals;
- alternative income-generating strategies to reduce the conversion of wildlife habitat for agriculture or grazing lands, and/or reduce the unsustainable exploitation of natural resources, such as bushmeat and fuelwood;
- increasing the benefits of living with wildlife: for example, through revenue-sharing and support to local development projects;
- enhancement of rural livelihood strategies through involving local communities in wildlife-related enterprises such as tourism and safari hunting. Amboseli National Park and the Maasai Mara Reserve provide contrasting examples of attempts to mitigate the costs and increase the benefits of living with wildlife (see Box 2).

Box 2 Amboseli National Park and Maasai Mara Reserve, Kenya: Contrasting examples of attempts to mitigate costs and increase benefits

Amboseli National Park was created in 1974 against a background of decline in pastoral livelihoods and a shift towards a mixed economy, and controversy about the future relationship between wildlife, livestock and people in southern Maasailand. In recognition of their role in shaping the ecosystem, the local Maasai became joint owners of surrounding bushlands through a number of group ranches. In order to mitigate conflicts, a compensation system was developed, involving improved access to water, direct economic benefits through the development of tourism, safari hunting and possibly wildlife cropping on group ranch land, and additional benefits in the form of social services. However, high initial expectations were not fulfilled and the compensation system broke down. In particular, the water supply was interrupted during critical dry periods, and the Maasai had little option but to return to their traditional sources of water and grazing inside the Park. Direct income was limited by the concentration of tourism facilities inside the Park and the ongoing hunting ban. New conflicts were threatened by the expansion of agriculture in an area adjacent to the Park in an attempt to diversify livelihoods, associated with the need for diversification and lack of confidence in the potential benefits of wildlife management. These failings have been attributed largely to lack of financial resources and the institutional weaknesses of the Wildlife Conservation and Management Department and lack of support from the Ministry of Tourism and Wildlife.

Responses from the mid-1980s included first the gradual strengthening of local participation and development of more community-based wildlife management initiatives, and second institutional reform, in particular the creation of the Kenya Wildlife Service. While the Amboseli experience has been protracted and controversial, it has played a significant role in stimulating policy change. There has been a gradual shift of authority and control over natural resources in favour of the Maasai, and the policy framework now in place provides greater scope for local participation in wildlife management.

In the Maasai Mara Reserve, competition over water and grazing resources in the dry season is less intense than in Amboseli, and expectations of revenues and development associated with the Reserve have largely been fulfilled through increasing tourism revenues. The local population was also more settled and concentrated, which has facilitated the development of social infrastructure such as schools and clinics.

'The traditional Maasai custom of maximising the number of cattle kept has begun to change, and local Maasai have been heard to say that wildlife has become as important to them as cattle, if not more so, because wildlife revenues continue to come in during times of drought or floods. Poaching and expenditure on anti-poaching efforts have reportedly dropped to negligible levels, and unlike the situation in most of the country numbers of elephant and rhino are increasing inside the Park'. (Talbot and Olindo, 1990:71).
Sources: Talbot and Olindo, 1990; Western, 1993

Evaluating impacts

Evaluating these efforts has proven problematic. This is partly because conservationists evaluate success in ecological and environmental terms (e.g. protection of habitat from degradation by increased human and livestock populations), while rural development specialists tend to use socio-economic criteria (e.g. reduced conflicts over natural resources, improved access to resources, and new activities for income generation). Socio-economic evaluations tend to aggregate costs and benefits, and fail to capture the indirect as well as direct impacts on rural livelihoods, their distribution between different groups, and the preconditions for engagement in certain activities. For example, the case study of local involvement in wildlife management on private land in Laikipia in Kenya (see Box 3) examines the types of assets required to participate successfully in these activities, but the analysis of outcomes is limited to financial impacts.

This paper draws on a sustainable livelihoods approach (Carney, 1998) to analyse alternative livelihood strategies, specifically a shift towards IWLM, from the pastoralist or agro-pastoralist perspective. This approach explicitly considers whether households have access to the assets required to engage in an activity, and how it 'fits' with existing livelihood activities. Drawing on this approach, we analyse below the impact of activities on a number of aspects of well-being at household level, such as food security, income generation, improved assets, reduced vulnerability, and the sustainable use of natural resources.

It is assumed that IWLM is adopted over an area which previously supported a wildlife reserve and separate livestock management (with no benefits from wildlife accruing to livestock owners). IWLM therefore implies an expansion in the range available for livestock grazing, and increased interactions between wildlife and livestock/agriculture. This is more subtle than a comparison between livestock management and IWLM over the same area, although that might better reflect the opportunity costs perceived by livestock owners. Impacts on pastoralists (assumed to derive their livelihoods primarily from livestock) and on agro-pastoralists (assumed to

derive their livelihoods from integrated livestock and agriculture) will differ significantly.

Box 3 Laikipia, Kenya: Financial or livelihood analysis?

In 1990 the Kenya Wildlife Service introduced a pilot wildlife utilisation programme in several districts. In Laikipia, successful wildlife tourism businesses provide the main economic justification for wildlife management as a land use (either alone or mixed with livestock). Commercial returns per hectare for wildlife viewing are up to four times that for livestock alone. However, market entry requires a land area of at least 10,000 ha, good access and, excellent wildlife viewing opportunities. This excludes most Laikipia landholders from becoming significant players. Wildlife cropping (as part of a Kenya Wildlife Service pilot utilisation project) has to date generated little in the way of economic benefits, and does not at present justify keeping wildlife on private land. Landholders retain less than five per cent of the final value of the wildlife products. Safari hunting is currently not an option, because of the continuing ban on hunting in Kenya, so ranches not suitable for tourism have no alternative use for wildlife.

A recent study of the livelihood impacts of mixed land use on a neighbouring group ranch shows that group ranch members receive minimal direct financial gain, but do gain from a number of other benefits, in particular improved security (due to radios purchased with income, patrols and cooperation with neighbours), improved transport to health care, and protection of a wilderness area from over-grazing without loss of access during drought years.
Sources: Elliott and Mwangi, 1997; Sikoyo and Ashley, forthcoming

Food security

IWLM over an expanded area implies enhanced quantity/quality of livestock, especially if pastoralists have better access to dry season grazing and water resources, but this will be partially offset by increased wildlife/livestock interactions leading to disease and predation. For pastoralists, IWLM should therefore improve food security through increased off-take of milk and meat. For agro-pastoralists, the impact of IWLM on food security will be more variable, depending on whether they are able to take advantage of additional grazing and water resources. Disease and predation impacts are likely to increase. Impacts on agriculture will mainly involve increased risk of damage to crops. Bushmeat consumption may decline for some or all households if IWLM also involves strengthened regulation of wildlife use outside the reserve. Permitting local hunting of common species and the distribution of meat from safari hunting or culling operations may mitigate this. In the longer term, the intention would be for total stocks of wildlife to increase, allowing increased sustainable offtake. If local hunting is not permitted, households will have little or no control over the timing of bushmeat supplies.

Impacts can be improved where IWLM increases access to valued grazing and water resources, where efforts are made to mitigate crop damage, predation and disease transmission, local hunting is permitted (especially of common species and crop pests) and a regular supply of meat from hunting and culling operations is ensured.

Cash income generation

IWLM has the potential to generate substantial income flows, especially through safari hunting and/or tourism, and increase total income at the community level, depending on the status of the wildlife resource, management options, resource tenure, legislation, etc. However, the value of income flows to local households will depend partly on timing with respect to household needs and partly on the degree of household control over this income. For agro-pastoralists, any increase in income from wildlife is likely to be offset by a reduction in income from agriculture and possibly livestock. Incentives for IWLM can be strengthened by enabling local communities to realise their share of the value of the resource (for example through revenue-sharing or leasing arrangements with distribution of cash revenues to households), and enhancing linkages with the local economy (for example, through local employment, small enterprise development and use of local inputs including agriculture and livestock products). Attention therefore needs to be given to ensuring that the timing of flows is consistent with household needs, and to mechanisms for devolving decision-making over this income to the household level. Enhanced income generation may compensate for a reduction in food security, depending on food availability in, and access to, local markets.

Improved assets

Where local tenure over wildlife is strengthened as part of IWLM, this would grant a one-off improvement in the household asset base. IWLM can also lead to ongoing improvements in the households' asset base through continued livestock management, sustainable use of wildlife and through cash generation for the purchase of further assets. For agro-pastoralists, livestock is an essential productive asset (providing agricultural inputs such as draught power and manure), and is used as a means of securing other assets, such as labour. Depending on the impact on agro-pastoralist livestock holdings, IWLM may enhance sustainability (through an increase in reproductive assets) at the cost of current livelihood opportunities (through a reduction in productive assets). Physical capital may improve if increased tourism associated with IWLM stimulates governments and/or the private sector to increase investment in physical infrastructure, such as roads. Social capital, developed through institutional capacity-building for IWLM, may have benefits beyond the wildlife and livestock sectors. Incentives for IWLM can be strengthened by enhancing income generation, minimising negative impacts on livestock holdings (especially draught livestock), and pursuing the wider benefits of institutional capacity-building.

Reduced vulnerability

IWLM implies a reduction in vulnerability through livelihood diversification and income generation, but this may be offset by a more risky portfolio. Vulnerability of livestock to drought may be reduced through access to more diverse grazing and water resources, but vulnerability to disease and predation will increase. Wildlife in its natural environment is less vulnerable to drought and disease than livestock (although disease may be transferred from livestock to wildlife, and vice versa), but wildlife management may expose households to volatile tourism markets. For agro-pastoralists, there will be increased risks of crop damage by wildlife. While all households must invest labour in preventing crop raiders, the losses suffered by a few households may be disproportionate to the benefits they receive through IWLM. Incentives for IWLM can be strengthened by acting to reduce the risks of disease transmission between livestock and wildlife, improving animal health care delivery

and through control of problem animals (including permitting local hunting of common pests).

Sustainable natural resource use

IWLM represents more efficient and sustainable use of natural resources for pastoralists. Rangeland dynamics and resilience have suggested that livestock management is less ecologically damaging if pastoralists have access to more diverse sources of grazing and water. For agro-pastoralists, the impact on the sustainability of natural resource use will depend on implications for agricultural production. Will IWLM slow down the shift from pastoralism to agro-pastoralism, and the expansion of the agricultural frontier? Will it provide funds for the sustainable intensification and/or modernisation of agriculture? Wildlife is indigenous and better adapted to local environments, and IWLM involves a more diverse range of species exploiting different niches and therefore makes more efficient use of available resources, but wildlife management is often dependent on external funds which may not be sustainable.

Questions of the sustainability of natural resource use under IWLM highlight the value of the sustainable livelihoods approach, because the overall impact will also reflect related changes to other natural resource-based components of livelihood strategies, in particular agricultural practices. Sustainability can therefore be enhanced by building on case-specific analysis of livelihoods, and adopting a holistic and flexible approach which incorporates support to other aspects of sustainable livelihoods.

Conclusions

The evidence suggests that, under certain conditions, IWLM can enhance sustainable rural livelihoods. The exact patterns of costs and benefits will clearly depend on case-specific circumstances. IWLM is more likely to be adopted where access to grazing and water resources is assured, and the potential for cash income generation is high. The scenario analysed above involved a choice between livestock management over a limited area or IWLM over an expanded area. However, livestock owners may perceive livestock management over the expanded area as a third alternative. On the other hand, conservationists may see IWLM as an opportunity to expand wildlife management over non-protected areas without increasing pastoralist access to protected areas. IWLM ‘fits’ better with pastoralist than agro-pastoralist livelihoods, but agro-pastoralists may be better able to secure cash benefits because of their different tenure situation and their sedentary lifestyle which facilitates involvement in tourism and the development of skills and structures to manage cash benefits. The potential for IWLM is probably greater in eastern Africa than in West Africa where the large mammal fauna is more severely depleted, or southern Africa where livestock owners are predominantly agro-pastoralists. Another region with potential for IWLM is Central Asia where pastoralists co-exist with wildlife with similar conflicts, but the scope for game-viewing tourism to contribute to their resolution is currently limited.

The analysis also demonstrates the potential value of the livelihoods approach for the systematic appraisal and evaluation of such initiatives. Livestock plays a complex and integrating role in the livelihoods of both pastoralists and agro-pastoralists, and a shift from livestock management to IWLM will have diverse impacts on well-being. Food security, cash income generation, improved assets, reduced vulnerability and

sustainable natural resource use are interconnected but not fully interchangeable, and cannot be reduced to a single numerator, as in conventional cost-benefit analysis. Social infrastructure, and even cash income, does not necessarily compensate for increased exposure to diseases, predation and crop pests. Attention needs to be given to mitigating costs as well as increasing benefits. Households need to be fully involved in decision-making about wildlife use and the allocation of benefits across different components of well-being, such as food, cash and different types of asset. Local tenure over wildlife is therefore essential for wildlife management to improve local livelihoods and contribute to both conservation and development objectives.

References

Behnke, R., Kerven, C. and Scoones, I. (eds). (1993) *Range ecology at disequilibrium*. London: ODI and IIED. Bourn, D. and Blench, R. M. (eds). (1999) *Livestock, wildlife and people in the semi-arid rangelands of eastern Africa*. London: ODI and ERGO. Carney, D. (ed). (1998) 'Sustainable rural livelihoods: What contribution can we make?' Papers presented at the DFID's Natural Resource Advisers' Conference, July 1998. London: DFID. Elliott, J. and Mwangi, M. M. (1997) 'Making wildlife "pay" in Laikipia, Kenya'. *Wildlife Economics*. Discussion Paper 1. Conservation, Economics and Commerce Programme. Nairobi: African Wildlife Foundation. Homewood, K., Kiwasila, H. and Brockington, D. (1997) *Conservation and development? The case of Mkomazi, Tanzania*. Report to ESCOR. London: DFID. IUCN (1998) *1997 United Nations List of Protected Areas*. Cambridge and Gland: IUCN. Lindsay, W. K. (1987) 'Integrating parks and pastoralists: Some lessons from Amboseli'. In D. Anderson and R. Grove (eds). *Conservation in Africa: People, policies and practice*. Cambridge: Cambridge University Press. Potkanski, T. (1997) 'Pastoral economy, property rights and traditional mutual assistance mechanisms among the Ngorongoro and Salei Maasai of Tanzania'. *Pastoral Land Tenure*. Series Monograph 2. London: IIED. Sikoyo, G. and Ashley, C. (forthcoming) *Economic and livelihood impacts of Il Ngwesi Lodge, Laikipia, Kenya*. Nairobi: African Wildlife Foundation. Talbot, L. and Olindo, P. (1990) 'Kenya: The Maasai Mara and Amboseli reserves'. In A. Kiss (ed). 'Living with wildlife.' *World Bank Technical Paper*. No.130. Washington, D. C.: World Bank. Western, D. (1993) 'Ecosystem conservation and rural development: The Amboseli case study'. Prepared for the Claiborne and Ortenberg Foundation Community-Based Conservation Workshop, Virginia, October 1993.

Charlotte Boyd can be contacted at: Overseas Development Institute, Portland House, Stag Place, London SW1E 5DP, UK
Email: c.boyd@odi.org.uk
Tel: +44 (0) 171 393 1663
Fax: +44 (0) 171 393 1699

Natural Resource Perspectives present accessible information on important development issues. Readers are encouraged to quote from them for their own purposes or duplicate them for colleagues but, as copyright holder, ODI requests due acknowledgement. The Editor welcomes readers' comments on this series.

Home Page

ISSN: 1356-9228

DFID Department for International Development

This series is published with financial support from the Department for International Development (formerly the Overseas Development Administration). Opinions expressed do not necessarily reflect the views of either ODI or DFID.

Overseas Development Institute
Portland House
Stag Place
London SW1E 5DP, UK

Telephone +44 (0)171 393 1600
Fax +44 (0)171 393 1699
Email: nrp@odi.org.uk